# Placement Empowerment Program

***Cloud Computing and DevOps Centre***

Set Up an S3-Compatible Storage Locally: Use MinIO to create a local object storage service. Upload and download files using the web interface or CLI.

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# Introduction

MinIO is an open-source, high-performance, and S3-compatible object storage solution. It allows users to store and manage data similar to Amazon S3 but runs locally on their own machines. This PoC explores how to install and configure MinIO using Docker, create storage buckets, and perform basic file operations.

# Overview

This PoC demonstrates the setup of MinIO on a local system using Docker. The steps include:

1. Installing and running MinIO in a Docker container.
2. Accessing the MinIO web interface.
3. Creating a storage bucket.
4. Uploading and downloading files.
5. Verifying storage operations.

MinIO serves as an excellent alternative to cloud-based object storage solutions, providing a local environment for development, testing, and learning.

# Objectives

The primary objectives of this PoC are:

1. To understand and implement an **S3-compatible** object storage solution locally.
2. To configure and manage MinIO using the **Docker container.**
3. To perform **basic storage operations** (creating buckets, uploading, and downloading files).
4. To explore **how MinIO can be used for cloud and DevOps workflows.**

# Importance

1. **Hands-on Experience with Object Storage** – MinIO provides a real-world S3-compatible storage experience.
2. **Local Development & Testing** – It eliminates dependency on cloud storage services, reducing costs.
3. **Easy Integration with DevOps Tools** – MinIO is widely used for Kubernetes, CI/CD pipelines, and big data workloads.
4. **Foundation for Cloud & AWS S3** – Understanding MinIO helps in working with AWS S3 and similar cloud-based object storage services.

# Step-by-Step Overview

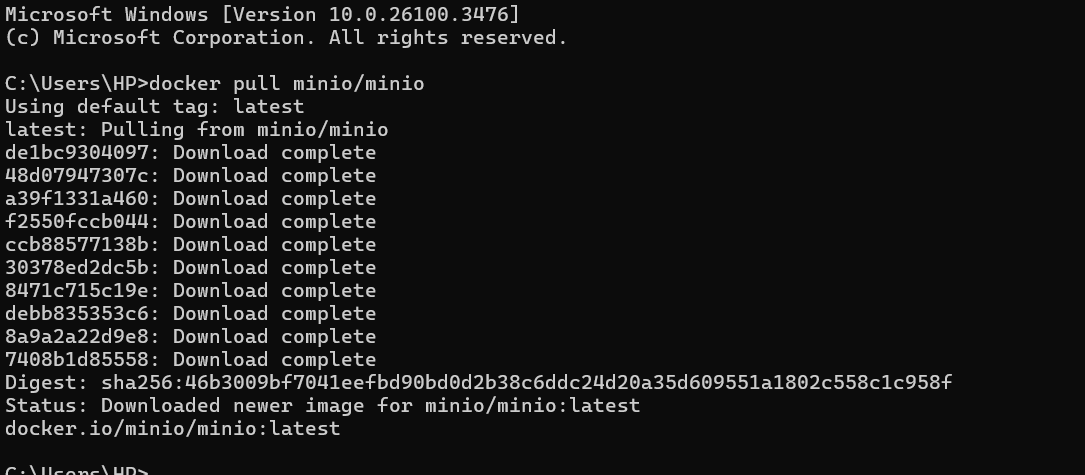
## Step 1:

**Pull the MinIO Docker Image:**

In the Command Prompt, execute:

**docker pull minio/minio**

This command downloads the latest MinIO image from Docker Hub.



## Step 2:

**Run the MinIO Container:**

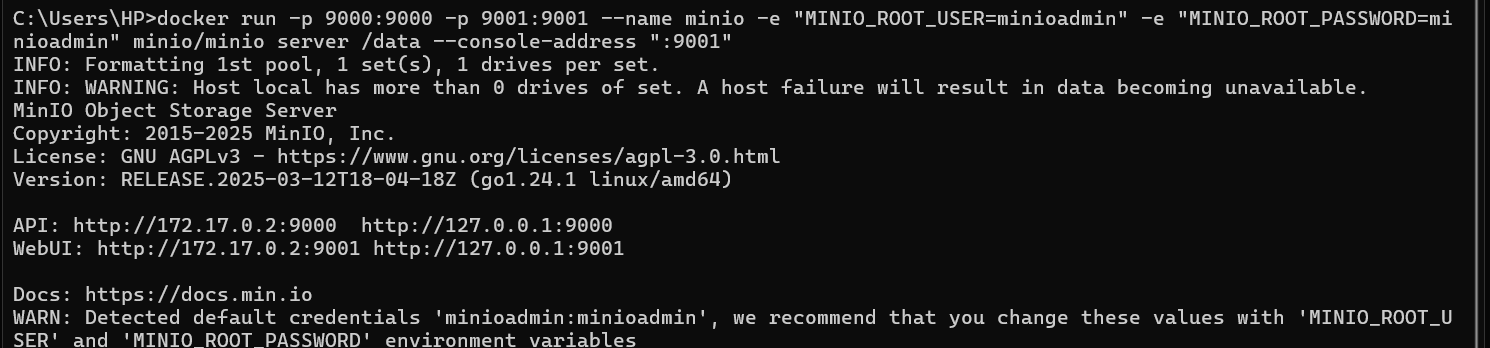
After the image is downloaded, start the MinIO container by running:

Command with the **default** MinIO credentials:

**docker run -p 9000:9000 -p 9001:9001 --name minio \**

**-e "MINIO\_ROOT\_USER=minioadmin" \**

**-e "MINIO\_ROOT\_PASSWORD=minioadmin" \ minio/minio server /data --console-address ":9001"**



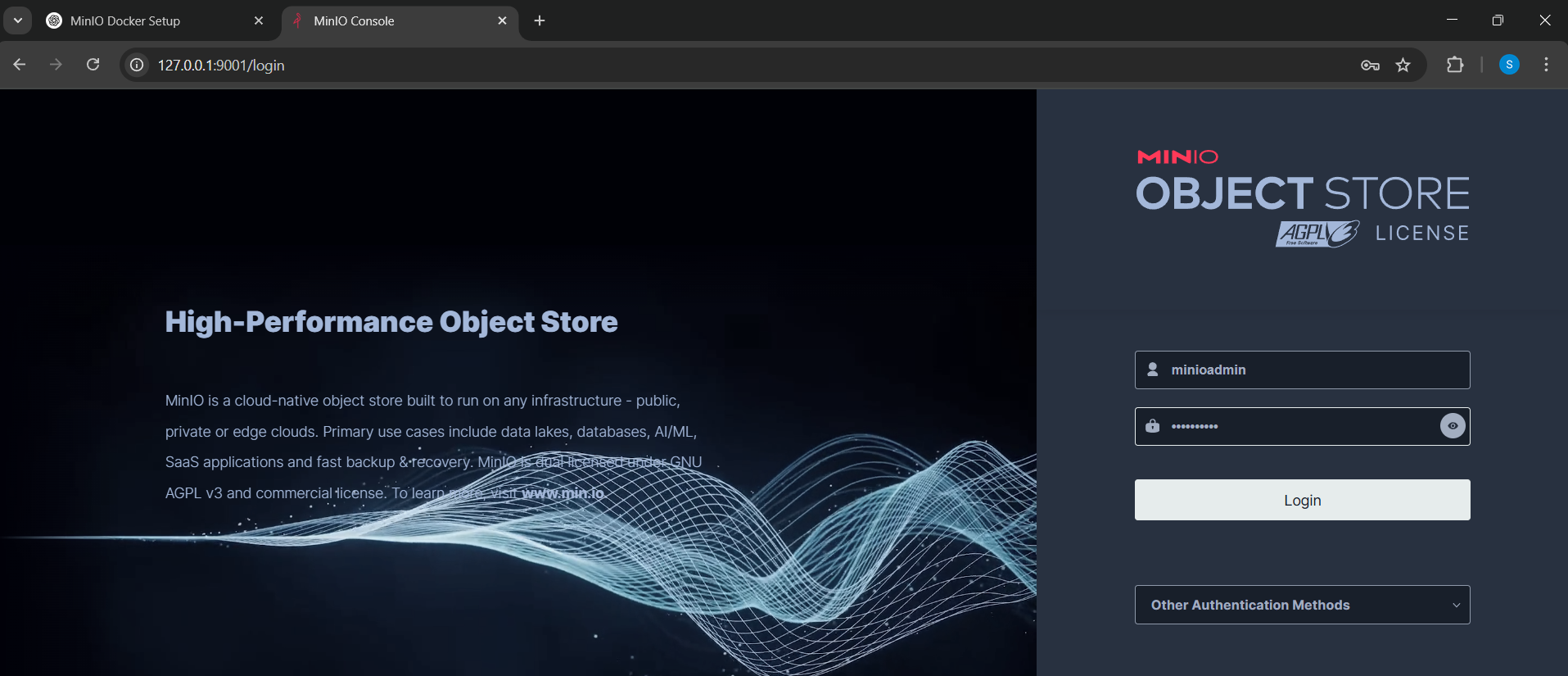
## Step 3:

Access the MinIO Web Interface

1. **Open your browser** and go to: [http://127.0.0.1:9001](http://127.0.0.1:9001/)
2. **Login with the default credentials: Access Key:** minioadmin

**Secret Key:** minioadmin

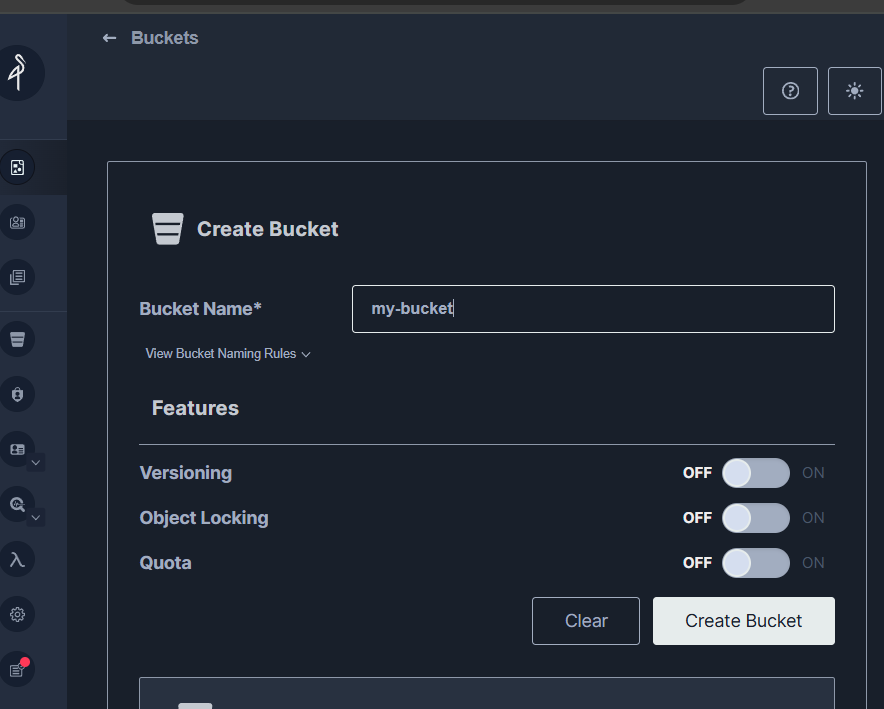
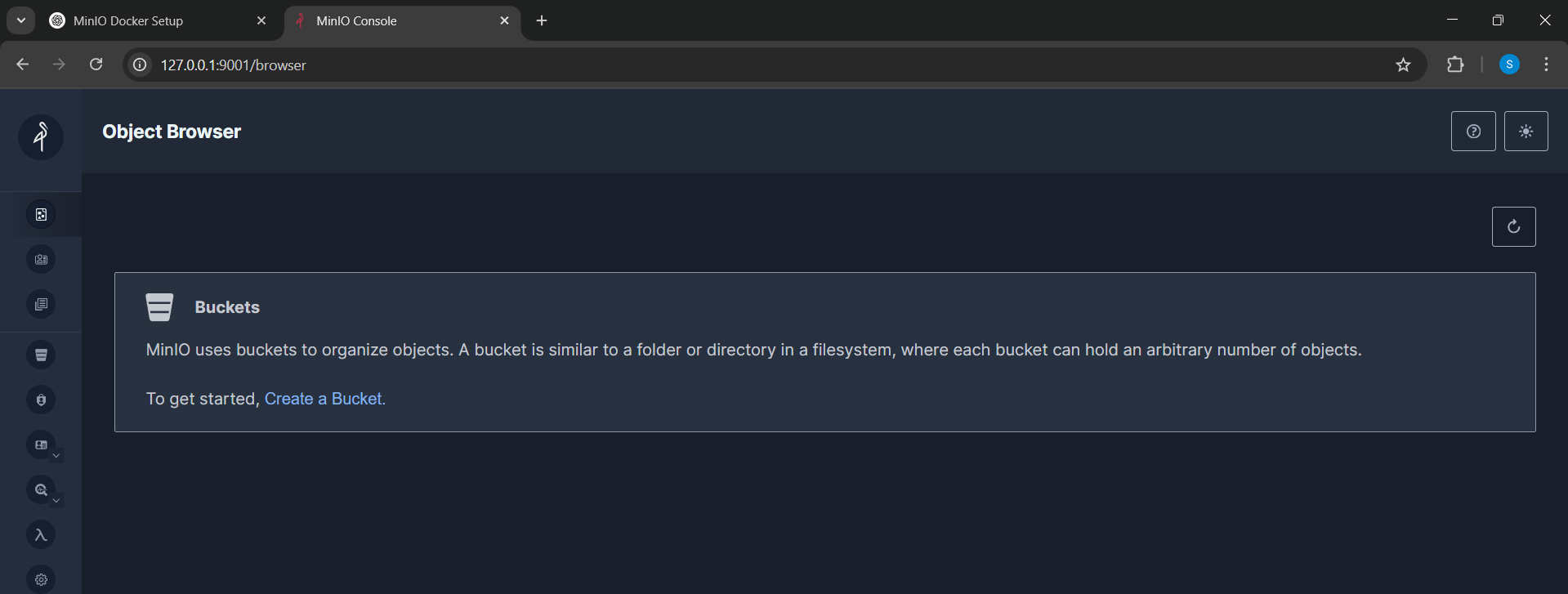
1. **Click "Sign In"**

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## Step 4:

Create a New Bucket

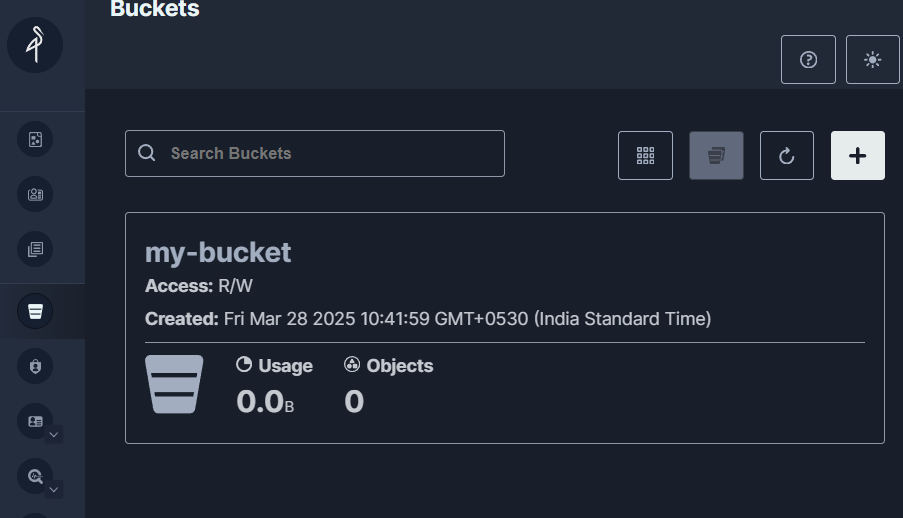
1. On the **MinIO Web Interface**, go to the **Buckets** tab.
2. Click **"Create Bucket"** (top-right).
3. Enter a **bucket name** (e.g., my-bucket).
4. Click **"Create"**

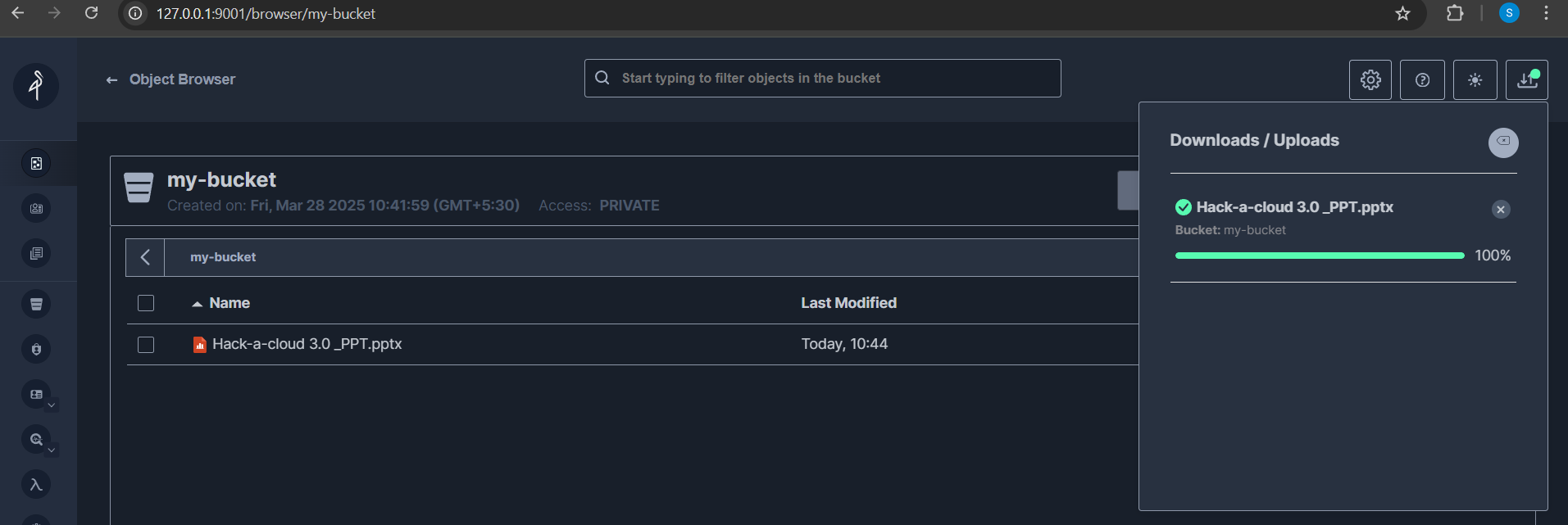
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## Step 5:

Upload a File

1. Open the newly created bucket (my-bucket).
2. Click **"Upload Files"** and select any file from your computer.
3. The file will now be stored in MinIO.

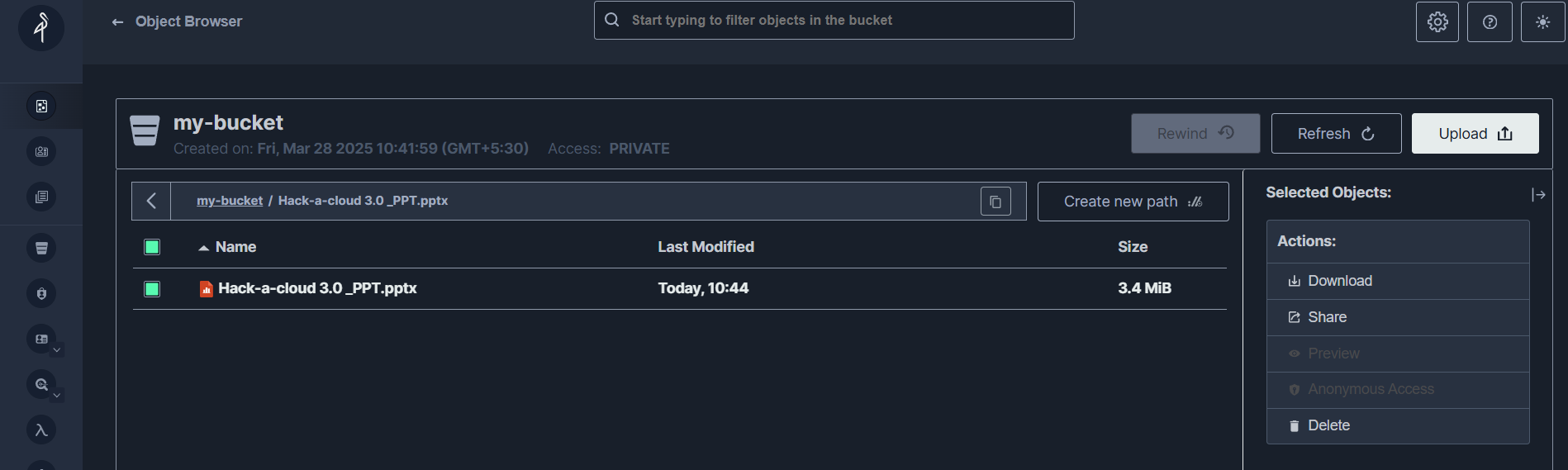




## Step 6:

Download a File

1. Click on the uploaded file inside the bucket.
2. Click **"Download"** to save it back to your computer.



## Step 7:

1. Press **Ctrl+C** to exit .
2. Stop the Running MinIO Container

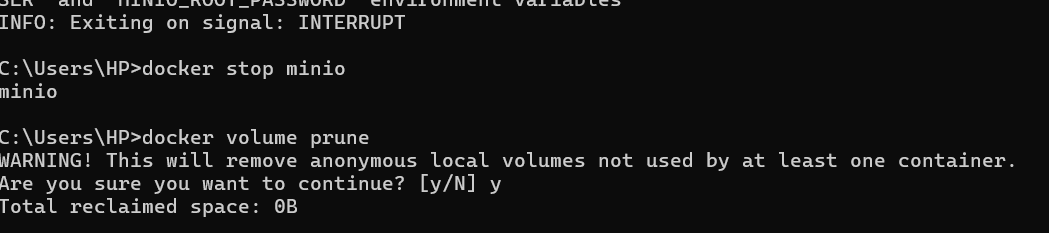
**docker stop minio**

1. Remove the MinIO Container

**docker rm minio**

1. Remove MinIO Data (Optional)

**docker volume prune**

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# Outcomes

By completing this **MinIO POC**, you will:

1. **Understand S3-Compatible Object Storage** – Gain hands-on experience with MinIO, an open-source alternative to AWS S3, for storing and retrieving objects efficiently.
2. **Deploy and Manage MinIO Using Docker** – Learn how to run MinIO inside a Docker container, exposing the necessary ports and configuring access credentials dynamically.
3. **Access MinIO via Web Interface & API** – Explore MinIO’s web UI for managing storage buckets and interact with its API for automation and scripting purposes.
4. **Perform Basic Storage Operations** – Create, upload, download, and delete objects in MinIO buckets using both the web console and command-line tools.
5. **Work with Environment Variables in Docker** – Learn how to configure MinIO dynamically using MINIO\_ROOT\_USER and MINIO\_ROOT\_PASSWORD environment variables during container deployment.